

REMARKS

Claims 1, 3, 5, 10-12, 25, 26, 143, 146, 153 and 155-160 are pending in the present application. All of the pending claims stand rejected under 35 U.S.C. § 103(a). In the present amendment, Claims 1, 143, 153, and 160 are being amended. Based on the foregoing amendments and the following remarks, reconsideration and further examination are requested. The undersigned would like to thank Examiner Steven Weinstein for the interview conducted on July 27, 2004.

Claim Amendments

Claims 1, 143, 153 and 160 are being amended herewith to clarify that the method of the present invention includes controllably maintaining a non-zero carbon dioxide concentration in a chamber within some desired range that inhibits the deterioration of respiring produce, without monitoring the carbon dioxide concentration within the chamber. In the most recent communication, the Examiner notes that claim 1 does not specify whether the carbon dioxide removing means functions in a continuous or intermittent manner. To more clearly define the invention, Claim 1 now clarifies that the removal is continuous.

Claim Rejections

The Examiner has rejected Claims 1, 3, 5, 10-12, 25, 26, 143, 146, 147, 148, 153 and 155-160 under 35 U.S.C. § 103(a) maintaining the previous rejection of the claims over International Patent Application WO 91/15719 by Huston in view of European Patent Application EP 353021 by Samuel, PCT Application WO 95/05753 by Bishop, Japanese Patent Application JP 2-82083 by Fukuda and European Patent Application EP 136042 by Lovegrove et al. The Examiner has

additionally rejected the claims over the above cited references and further in view of U.S. Patent No. 4,079,152 by Bedrosian et al. The rejections are respectfully traversed.

Relevant Legal Doctrine

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In addition, there must be a teaching or suggestion to make the claimed combination and a reasonable expectation of success that are found in the prior art, and not in the applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, references must be considered in their entirety including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc., v. Gartlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983).

U.S. Patent No. 4,079,152 to Bedrosian et al.

The Examiner has cited Bedrosian et al. as teaching the provision of a 'modified equilibrium' atmosphere and has made reference in particular to the disclosure of Column 4 as being pertinent to the claimed subject matter. Bedrosian et al. disclose a method and device for providing a controlled atmosphere containing relatively stable equilibrium values of O₂ and CO₂, as a result of the permeability of a selected film to those gases. See, Col. 4, lines 26-43; and Table 1.

Rejection of Claims in View of Bedrosian et al.

In rejecting the claims in view of Bedrosian et al., the Examiner states that Bedrosian et al. clearly predetermines the interaction of the film, which creates desired atmospheric concentration, the respiration ratio of product and amount of carbon dioxide removed to create the predetermined carbon dioxide concentration so that no carbon dioxide monitoring is necessary. The undersigned respectfully submits that the Examiner reads too much into the disclosure of Bedrosian et al. At most, Bedrosian et al. can be read to show that ripening can be retarded by using prescribed permeability films, that CO₂ absorbents such as lime are known, and that relatively high concentrations of CO₂ can in certain circumstances be beneficial to produce preservation. However, the Examiner makes a giant leap by concluding from the facts disclosed in Bedrosian et al. that the combination of elements that result in the present invention is obvious, including maintaining a non-zero concentration of CO₂ in a controlled chamber that periodically admits ambient air in response to monitoring of O₂ within the chamber, the CO₂ concentration being maintained so that it inhibits deterioration of respiring produce within the chamber.

Further, the Examiner has failed to appreciate a number of important aspects essential to the device and method disclosed by Bedrosian et al., and therefore how the disclosure of Bedrosian et al. does not render obvious the claimed subject matter of the present invention.

The use of a CO₂ absorbent material by Bedrosian et al. is not a fundamental characteristic of the equilibrium established in the container based on any predictions that may be made. As Column 4, lines 40-43 make clear “the carbon dioxide evolved by the fruit as a result of respiration is roughly equivalent to the carbon dioxide permeability of the film.” This indicates that the equilibrium established in the container is based on the permeability of the film. At Column 3, lines 42-45 Bedrosian et al. suggest that a CO₂ absorbent (lime) can be used to suppress CO₂ levels (and see

Column 6, lines 21-24, where a combination of lime and CaCl_2 reduces CO_2 to $\leq 1.1\%$). In other words, a CO_2 absorbent is simply being used to reduce CO_2 levels as far as possible, but is not a primary consideration with respect to the establishment of any kind of prescribed equilibrium. The objective in Bedrosian et al. of the lime appears to be simply to reduce CO_2 as far as practicably feasible to avoid injuring the tomatoes as stated at Column 3, lines 39-47.

As stated above, Bedrosian et al. disclose a thin film package with specific permeability characteristics. Such packages always achieve some kind of equilibrium, as there is no control over the conditions within the package once the package is sealed. Further, it is important to recognize that the thin film package disclosed by Bedrosian et al. achieves its desired equilibrium by way of a differential permeability to O_2 and CO_2 , respectively. Only with a differential permeability can the concept disclosed by Bedrosian et al. achieve the desired levels of both constituents.

Bedrosian is a permeable-film device; once sealed there is no further monitoring or control. Lovegrove et al. and similar describe (like the present application) a continually controllable chamber (CAC) apparatus. If one were to try and apply the teachings of Bedrosian et al. to those of Lovegrove et al. (or to one of the other references cited by the Examiner), one would use a film of differential permeability to seal a controlled atmosphere chamber, with no monitoring or further active intervention, as the thin film properties (as taught by Bedrosian et al.) would be wholly sufficient to achieve a produce-friendly equilibrium. This may be achievable, but is of course a long way away from the presently claimed invention. In other words, even if one were to accept the Examiner's combination of teachings from very different technical areas (and we would submit that there is no incentive to make such a combination), one would fall far short of the present invention.

Moreover, it is not clear what motivation someone of ordinary skill in the art would have for combining the teachings of Bedrosian et al. which apply to permeable film packages to the other

references cited by the Examiner, which relate to controlled atmosphere chambers. The Examiner has not set forth a line of reasoning as to why someone of ordinary skill in the art would take the teaching of Bedrosian et al., which relate exclusively to permeable films, and apply them successfully to controlled atmosphere chambers to achieve the combination of the present invention.

In the most recent communication, the Examiner argues that CO₂ can be removed whether it is monitored or not. That is of course correct, but such a process would not arrive at the claimed result of achieving a desired CO₂ level, through monitoring only the O₂ level and selectively admitting ambient air.

For at least the foregoing reasons, Claims 1, 3, 5, 10-12, 25, 26, 143, 146, 153, 155-160 are patentable over Huston, Samuel, Bishop, Fukuda and Lovegrove et al. in view of Bedrosian et al.

Claim Rejections Based on Huston, Samuel, Bishop, Fukuda and Lovegrove et al.

As stated in the previous Amendment and Response, Huston, Samuel, Bishop, Fukuda and Lovegrove et al. do not teach or suggest a method of establishing a prescribed CO₂ level in a controlled chamber without monitoring of the CO₂, but by only monitoring the O₂ concentration within the chamber. Enclosed herewith is a declaration from Sanjay Savur, an expert in the field of controlled atmosphere chambers, stating that the references cited by the Examiner do not teach or suggest to someone of ordinary skill in the art how a selected non-zero CO₂ equilibrium might be achieved without operating a CO₂ scrubber in response to a signal indicating a measured concentration of CO₂.

To summarise, none of the references teaches a controlled atmosphere system in which O₂ and CO₂ can be maintained at mutually independent, pre-determined levels solely through monitoring the O₂ concentration and admitting atmospheric air. The prior art universally operated on

the assumption that unless the CO₂ levels were monitored (and appropriate action taken as a result of such monitoring), CO₂ concentrations could not be controlled independently of O₂ levels. The invention is indeed simple, but nonetheless it is a powerful one, and one that has fundamentally changed the way perishable produce can be stored and transported, as testified by Sanjay Savur in the attached declaration.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned. Although the Applicant believes that no additional fees are due for filing this Amendment and Response, please charge any required fees to Deposit Account No. 50-1419.

Respectfully submitted,

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